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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/800,773	03/08/2001	Akira Oosawa	Q61190	6412

7590 11/24/2003

SUGHRUE, MION, ZINN,
MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037-3202

EXAMINER

CHOOBIN, BARRY

ART UNIT	PAPER NUMBER
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2625

DATE MAILED: 11/24/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/800,773

Applicant(s)

OOSAWA, AKIRA

Examiner

Barry Choobin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on June 13, 2001 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 4, 5, 7, 9, 10, 11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Kano et al (US 5,359,513).

As to claims 1 and 10, Kano et al disclose an image processing method for carrying out image processing on an interimage-difference image obtained by subjecting two desired images from among two or more images taken of the same subject to interimage processing and which represents the substantial difference between said two images (column 13, lines 20 – 46), wherein said image processing carried out on said interimage-difference image is image processing by which the substantial difference between said two images represented therein is enhanced relative to artifacts arising due to misalignment of structural positions contained within said two images (column 13, lines 20 – 46).

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As to claims 2, 4, 11 and 13, Kano et al disclose image processing comprises suppressing said artifacts relative to the substantial difference between said two images (column 9, line 35 through column 10, line 8).

As to claim 5, Kano et al disclose an image processing method as defined in claim 1, 2, or 4 (see rejection for claims 1, 2 or 4), wherein said interimage processing comprises subtraction of corresponding structural positions within said two images (column 5, line 60 through column 6, line 11).

As to claim 7, Kano et al disclose an image processing method as defined in claim 1, 2, or 4, (see rejection for claims 1, 2 or 4) wherein said two images are radiation images taken of the same subject at different points in time in a time series manner (column 15, lines 63 – 68).

As to claim 9, Kano et al disclose an image processing method as defined in claim 5 (see claim 5), wherein said two images are radiation images taken of the same subject at different points in time in a time series manner (column 15, lines 63 – 68).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3, 6, 8, 12 and 14 – 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kano et al in view of Takeo et al (us 6,169,823).

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As to claims 3 and 12, kano et al disclose the limitation of claim 2 (see claim 2 above), however Kano et al fails to disclose performing image processing based on a morphology process utilizing structural elements larger than said artifacts and smaller than said substantial difference.

But on the other hand, Takeo et al in IMAGE PROCESSING METHOD AND APPARATUS disclose image processing based on a morphology process utilizing structural elements larger than said artifacts and smaller than said substantial difference (column 8, lines 10 – 61 and Fig. 14A-14D) in order to detect calcify pattern.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the work of Takeo et al with kano et al because with a simple smoothing method, it is difficult to discriminate the calcified pattern from an elongated non-calcified pattern (for example, a pattern of the mammary gland, a blood vessel or the like). Therefore, when the smoothed image signal obtained from the opening processing (i.e. the signal representing the image, from which only the calcified pattern has been removed) is subtracted from the original image signal, an image can be obtained which contains only the small calcified pattern (column 8, lines 50 –60).

As to claims 6 and 14, Kano et al disclose an image processing method as defined in claim 3 (see claim 3) wherein said interimage processing comprises subtraction of corresponding structural positions within said two images (column 5, line 60 through column 6, line 11).

As to claims 8 and 15 - 16, Kano et al disclose an image processing method as defined in claim 3 (see claim 3), wherein said two images are radiation images taken of the same subject at different points in time in a time series manner (column 15, lines 63 – 68).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A: US Publication 2001/0007593 to Oosawa is cited for Method and unit for displaying images.

B: US Publication 2002/0097901 to Xu et al is cited for method and system for the automated temporal subtraction of medical images.

C: US 5832134 to Avinash et al is cited for data visualization enhancement through removal of dominating structures.

D: US 6574374 to Acharya is cited for Enhancing image compression performing by morphological processing.

E: US 6112112 to Gilhuijs et al is cited for Method and system for the assessment of tumor extent in magnetic resonance images.

F: US 5490221 to Ransford et al is cited for Digital data registration and differencing compression system.

G: US 5535289 to Ito is cited for Method for reducing noise in energy subtraction images.

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H: US 6594378 to Li et al is cited for temporal subtraction images using elastic matching.

I: US 6075877 to Takeo et al is cited for Method and apparatus of image processing using energy subtraction parameters according to thickness of an object.

J: US 6067373 to Ishida et al is cited for image warping prior to temporal subtraction of chest radiographs in the detection of internal changes.

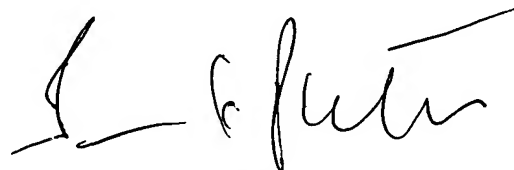
K: US 5987345 to Engelmann et al is cited for Method and system for displaying medical images.

CONTACT INFORMATION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barry Choobin whose telephone number is 703-306-5787. The examiner can normally be reached on M-F 7:30 AM to 18:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 703-308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.



Jayanti K. Patel
Primary Examiner

Barry Choobin

November 12, 2003